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10/757,859	01/15/2004	Laurent Launay	14XZ126397 (GEM-0128)	4616

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EXAMINER	
LAY, MICHELLE K	
ART UNIT	**PAPER NUMBER**
2672	

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/757,859	LAUNAY ET AL.	
	Examiner	Art Unit	
	Michelle K. Lay	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 7-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 7-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 November 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413). Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed on 23 November 2005, has been entered and made of record. The replacement drawing filed on 23 November 2005 has overcome the drawing objection made in the Non-Final office action filed 22 August 2005. The amendment to claims 45-55 has overcome the drawing objection made in the Non-Final office action filed 22 August 2005. The amendment to claims 24 and 25 has overcome the claim objections made in the Non-Final office action filed 22 August 2005. Claims 4-6 have been cancelled. Claims 1-3, and 7-58 are pending.

Response to Arguments

Applicant's arguments filed 23 November 2005 have been fully considered but they are not persuasive. Applicant argues the prior art (Ono et al. US Patent No. 5,588,097) does not teach or suggest orienting a 3D model such that a defined axis is parallel to the plane of the display. Examiner respectfully disagrees. The data to be inputted by the user for the rotational operation includes components for the surface coordinates (i.e., polar coordinates) and a component for the rotation angle about an axis [col. 3, lines 45-47]. When points P1 and P0 are the same point on the spherical surface (22), the object rotates around the O-P0 axis by the angle of rotation α specified by P0, P2 and P3 [col. 3, lines 61-65]. Although Ono et al. does not explicitly disclose orienting the 3D model parallel to the plane of means for display, by defining points P2 and P3 equal to P0, the angle of rotation α equals zero, thus orienting the 3D

model along the O-P0 axis, i.e. parallel to the plane of the means for display (claims **1**: orients the 3D in such a manner that the axis defined by the two points indicated by the user is parallel to the plane of the means for display). It would have been obvious to one of ordinary skill in the art to set points P2 and P3 to equal P0 in order for the angle of rotation α to equal zero so that the 3D model orients itself with the display, so that the user can see the details of the 3D model that is being rotated.

Claim Objections

Claims **10**, **29**, **38**, and **48** are objected to because of the following informalities: Claims **10**, **29**, **38**, and **48** are dependent on a cancelled claim. Appropriate correction is required.

Claims **14**, and **19** are objected to because of the following informalities: Claims **14**, and **19** are dependent on a claim that is dependent on a cancelled claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims **57** and **58** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Referring to claims **57** and **58**, "carrier" is not supported by the specification. Even though the amendment to the specification (newly added paragraph [0011]) refers to the carrier, the disclosure does not provide more detail from the claim language to define what the carrier is.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 57 and 58 recites the limitation "carrier". The term "carrier" is so broad that it is unclear as to what it pertains to. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims **1-3**, **7–44**, and **56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (US Patent No. 5,588,097).

Ono et al. teaches the limitations of claims **1-3**, **7–44**, and **56** with the exception of explicitly disclosing orienting the 3D model parallel to the plane of the means for

display. However, Ono et al. teaches rotating a 3D object around the O-P0 axis at an angle specified by three points.

In regards to claims **1**, **2**, **56** –

Ono et al. discloses a system and method for determining three degrees of freedom for orientation. Referring to Fig. 1, the graphic input apparatus of Ono et al. includes an input/output section (1) which includes a keyboard (4) and a table (5) which are used for inputting character and numerical information [col. 2, lines 33-40]. The system also includes an image generating section (2) and figure rotation processing section (3) which are provided to the display screen (6) (claims **1**, **56**: a user interface) via a two-dimensional display device (9) (claims **1**, **56**: means for display) [col. 2, lines 48-51]. The image generating section (2) includes a figure-processing device (11) for generating, in the image generation mode, a three-dimensional figure based on the input information from the user (claims **1**, **56**: means for processing image data in order to display the data in the form of a 3D model) [col. 2, lines 55-59].

Figs. 5-9 specifies the respective three degrees of freedom for rotation. First, the center position of the object (21) being displayed on the screen (6) is automatically determined as a fixed point (step 41). If the user wants to select a point other than the object center as the fixed point, the user can specify such a point separately [col. 4, lines 4-8]. Then, the user specifies one point on the spherical surface (22) displayed on the display screen (6) by pen (7) (step 43) (claims **1**, **56**: the means for processing acquires at least two points positioned in the 3D model via the user interface; claim **2**:

means for positioning an image acquisition system relative to an object) [col. 4, lines 22-23]. Depending on an instruction from the user, an axis connecting the center O of the spherical surface (22) and the first-input point P0 is also displayed (claims **1**, **56**: to deduce the positioning of an axis defined by the two points in the 3D model) [col. 4, lines 39-41]. Referring to Fig. 6, the polar coordinates (θ_0, Φ_0) of the starting point P_0 being displayed on the spherical surface (22) are determined from its three-dimensional coordinates (step 61). The polar coordinates $(\theta_1, \Phi_1)$of the final input position P1 of a continuous trace have been made by the user on the spherical surface (22) user the pen (7) (step 63) are determined. The differences between the coordinates are calculated. These differences correspond to the variation of the posture of the object (21) in its initial state. Thus, the user can rotate the object (21) to a desired orientation. Upon completion of the input, the marker that was indicated at the first stage is erased, and the process returns to the initial state (step 67-69) (claims **1**, **56**: reorient the 3D model such that the axis is in a predefined orientation relative to a plane of the means for display; claim **2**: means implement positioning of the acquisition system to correspond with an orientation of the model as displayed on the means for display). [col. 5, lines 1-23].

The data to be inputted by the user for the rotational operation includes components for the surface coordinates (i.e., polar coordinates) and a component for the rotation angle about an axis [col. 3, lines 45-47]. When points P1 and P0 are the same point on the spherical surface (22), the object rotates around the O-P0 axis by the angle of rotation α specified by P0, P2 and P3 [col. 3, lines 61-65]. Although Ono et al.

does not explicitly disclose orienting the 3D model parallel to the plane of means for display, by defining points P2 and P3 equal to P0, the angle of rotation α equals zero, thus orienting the 3D model along the O-P0 axis, i.e. parallel to the plane of the means for display (claims **1**: orients the 3D in such a manner that the axis defined by the two points indicated by the user is parallel to the plane of the means for display). It would have been obvious to one of ordinary skill in the art to set points P2 and P3 to equal P0 in order for the angle of rotation α to equal zero so that the 3D model orients itself with the display, so that the user can see the details of the 3D model that is being rotated.

In regards to claims **3**, **11-22**, **24**, **25** –

The rationale of claim 1 is incorporated herein. Referring to Figs. 8 and 9, a line segment OP1 connecting the point P1 that has already been inputted and the center O of the imaginary spherical surface (22) is regarded as the rotation of axis (step 81). Then, a point P2 on the spherical surface (22) that is inputted by the user is indicated by a marker as the rotation start point (step 82). The user moves the pen (7) from the start point P2 in the direction of the desired rotation and then specifies another point P3 on the spherical surface (22), so that the angle $P_2P_1P_3$ defines a rotation angle α (claim **3**: means for orienting by controlling an angular position of the system to correspond with an orientation of the 3D model as defined on means for display) [col. 5, lines 24-45]. The posture of the object (21) after it is subjected to the rotation is calculated by the projection conversion circuit (18) and the calculation results are displayed on the display screen (6) [col. 5, lines 40-46]. Thus, the single calculation provides a section view of

the 3D model on a section plane which presents a predefined orientation relative to the axis indicated by the user since it shows one angle of orientation of the 3D model (claims **11-15**: display of a section view of the 3D model on a section plane which presents a predefined orientation relative to the axis indicated by the user). By repeating the above operations, the user can rotate the object (21) in the desired direction (step 86) (claims **16-20**: moves the section plan progressively under control from the user interface) [col. 5, lines 46-48]. Furthermore, as the user rotates the object (21), i.e. moving the section plan in the 3D model, the rotation angle α is kept constant (claims **21**, **22**, **24**, **25**: moves the section plane in the 3D model while keeping the section plane in a predefined orientation).

In regards to claims **7-10**, **23** –

The rationale of claim 1 is incorporated herein. The data to be inputted by the user for the rotational operation includes components for the surface coordinates (i.e., polar coordinates) and a component for the rotation angle about an axis [col. 3, lines 45-47]. When points P0 and P1 are the same point on the spherical surface (22), the object rotates about the axis (O-P0) by the rotation angle α by specifying point P0 and then determining points P2 and P3 (claims **7-10**: implements rotation of the 3D model about the axis defined by the two points indicated by the user) [col. 3, lines 60-65]. Thus, by defining points P2 and P3 as P0, the angle of rotation α is zero resulting in a rotation around the O-P0 axis, i.e. parallel to the plane of the means for display (claim **23**:

predefined orientation of the section plane is orientated parallel to the axis indicated by the user).

In regards to claims **26-44** –

The rationale of claim 1 is incorporated herein. With reference to Figs. 5 – 9, the center position of the object (21) being displayed on the screen (6) is automatically determined as a fixed point (step 41). If the user wants to select a point other than the object center as the fixed point, the user can specify such a point separately [col. 4, lines 4-8]. Then, the user specifies one point on the spherical surface (22) displayed on the display screen (6) by pen (7) (step 43) [col. 4, lines 22-23]. If another point P1 is inputted immediately after the first point P0, it is determined that the axial rotation angle is going to be inputted (step 49) (claims **26-34**: acquires at least three points positioned in the 3D model; claims **35-44**: acquires a plurality of points) [col. 4, lines 49-54]. Depending on an instruction from the user, an axis connecting the center O of the spherical surface (22) and the first-input point P0 is also displayed [col. 4, lines 39-41], as well as a line segment OP1 connecting the point P1 and the center O (claims **26-34**: to deduce two axes therefrom each passing through a pair of points; claims **35-44**: deduce a plurality of axes therefrom that are not all mutually parallel, each passing through a different pair of points selected from the plurality of points) [col. 5, lines 30-32]. Since both points, i.e. P0 and P1 are x, y coordinates, it can be concluded that the axis formed with these points, i.e. O-P0 and O-P1, are parallel to the display (claims **26-34**: reorient the 3D model in such a manner that the two axes are substantially parallel

to the means for display; claims **35-44**: reorient the 3D model bringing the set of the axes as close as possible to parallel with the plane of the means for display).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims **45-55** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (US Patent No. 5,588,097) in view of Gillio (US Patent 5,704,791).

Ono et al. teaches the limitations of claims **45-55** with the exception of disclosing physically orienting an image sensor relative to the final confirmed orientation. However, Gillio teaches a virtual surgery system where the user can simulate surgical procedures on a display and have a robot perform the same operation. The rationale of claim 1 is incorporated herein.

Ono et al. discloses a system and method for determining three degrees of freedom for orientation. Referring to Figs. 8 and 9, a line segment OP1 connecting the point P1 that has already been inputted and the center O of the imaginary spherical surface (22) is regarded as the rotation of axis (step 81). Then, a point P2 on the spherical surface (22) that is inputted by the user is indicated by a marker as the rotation start point (step 82). The user moves the pen (7) from the start point P2 in the direction of the desired rotation and then specifies another point P3 on the spherical

surface (22), so that the angle $P_2P_1P_3$ defines a rotation angle α about axis OP1 (step 83 and 84) [col. 5, lines 24 – 45]. Next, the axial rotation angle is calculated by the axial rotation angle calculation circuit (18). The posture of the object (21) after it is subjected to the rotation is calculated by the projection conversion circuit (18) and the calculation results are displayed on the display screen (6) [col. 5, lines 40-46]. By repeating the above operations, the user can rotate the object (21) in the desired direction (step 86) [col. 5, lines 46-48]. Upon completion of the input, the marker that was indicated at the first stage is erased, and the process is finished (step 87 and 88) (claims **45-55**: identifying a final orientation of the 3D model as confirmed by the user) [col. 5, lines 45-48].

Gillio discloses a virtual surgery system based on image data. As shown in Fig. 1, the virtual surgery system includes computer (100), which includes a processor (102) and a memory(104). The virtual surgery system additionally includes a virtual scope handle mouse device (106) (claims **45-55**: means for producing a command signal for physically orienting an image sensor relative to the user) [col. 4, lines 15-24]. Image data is stored in memory (104) of the computer (100). Where the image data may be a three-dimensional data set [col. 4, lines 44-47]. Memory (104) may also store image data unrelated to or having no bearing on a human or animal anatomy. This image data may relate to particular volumes, shapes, sizes, textures, etc. [col. 4, lines 63-66]. As the user moves a virtual scope to traverse through an image space and perform virtual surgery in that image space, the computer or processor tracks where the endoscopic camera is, and what that camera is looking at [col. 16, lines 15-19]. Telesurgery may be

used where a surgeon performs surgery form a distance. A robot can be used to simulate hand movements of the surgeon at the remote location via a tele-robotic unit. The robot can move the real endoscope or other surgical device according to the movements of the surgeon performed using a virtual scope (claims **45-55**: physically orienting an image sensor relative to the user) [col. 17, lines 13-18].

Therefore, it would have been obvious to one of ordinary skill in the art to replace the graphics processor of Gillio with the image generating section that includes a figure processing device of Ono et al. so the physical model of the 3D model in correspondence with the 3D model on the display means of Ono et al. can be manipulated only once in accordance to the desired manipulation made on the display means of Ono et al., preventing unwanted orientation of the physical 3D model.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday - Friday, 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michelle K. Lay
Patent Examiner
Art Unit 2672

12.07.2005 mkl

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